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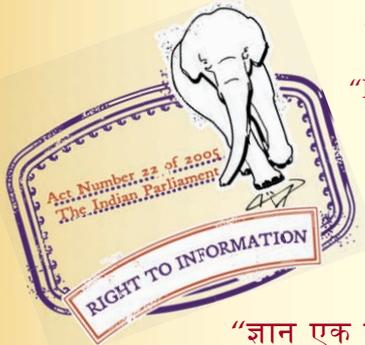
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IS 12176 (1987): Sweetened Ultra High Temperature (UHT) Treated Condensed Milk [FAD 19: Dairy Products and Equipment]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



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*Indian Standard*  
SPECIFICATION FOR  
SWEETENED ULTRA HIGH TEMPERATURE  
(UHT) TREATED CONDENSED MILK

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BUREAU OF INDIAN STANDARDS  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

# *Indian Standard*

## SPECIFICATION FOR SWEETENED ULTRA HIGH TEMPERATURE (UHT) TREATED CONDENSED MILK

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*Indian Standard*  
SPECIFICATION FOR  
SWEETENED ULTRA HIGH TEMPERATURE  
(UHT) TREATED CONDENSED MILK

0. FOREWORD

**0.1** This Indian Standard was adopted by the Bureau of Indian Standards on 30 September 1987, after the draft finalized by the Dairy Products Sectional Committee had been approved by the Agricultural and Food Products Division Council.

**0.2** Condensed milk of various types are produced by partial removal of water of either whole, partially skimmed, skimmed or reconstituted or recombined milk with suitable adjustment of milk solids and with the addition of sucrose in the form of refined sugar. The removal of water leads to the possibility of storage of the resulting products unchanged for an appreciable length of time. An Indian Standard IS : 1166-1986\* has already been published which prescribes the requirements for condensed milk produced by the conventional method of evaporation in *vacuo* of milk and sterilization in the container. This standard covers ultra high temperature treated ( UHT ) condensed milk.

**0.2.1** There have been several technological advancements in the field of milk processing, notable amongst these is the process of sterilization of milk and several other milk products by ultra high temperature (UHT) method followed by aseptic packaging. The heat involved in this method is less severe than the conventional in-bottle or in-can sterilization, thus ensuring milk or milk products of highly acceptable quality with much less loss of nutrients. With the advent of UHT processing technology, it is possible to manufacture a highly satisfactory 1 : 2 milk concentrate with added sugar to suit the palate of consumers.

**0.2.2** In addition to its use, on reconstitution with an equal volume of water, as fluid milk, the product is also used in the manufacture of bakery products, confectionery, a variety of Indian sweets, ice-cream, *kulfi* and other food products.

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\*Specification for condensed milk, partly skimmed and skimmed condensed milk (second revision).

0.3 This standard is expected to help the manufacturers in exercising necessary quality control in the manufacture of this product and to encourage the new manufacturers to take up the production of this product.

0.4 The inclusion of the UHT condensed milk in the PFA Rules, 1955 has been referred to the Central Committee for Food Standards for consideration.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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## 1. SCOPE

1.1 This standard prescribes the requirements and methods of test for UHT condensed milk and UHT condensed skimmed milk.

1.1.1 This standard does not apply to any form of concentrated milk not packed in sealed unit containers, intended for dilution into standardized, toned, double-toned; or skimmed milk.

## 2. TERMINOLOGY

2.0 For the purpose of this standard, the following definitions shall apply.

2.1 Ultra High Temperature ( UHT ) — The process of sterilizing the product by heating it at a temperature of not less than 140°C for a minimum period of 3 seconds followed by aseptic packaging.

2.2 UHT condensed milk means the product obtained from cow or buffalo milk or a combination thereof or from standardized milk or recombined milk or skim milk by partial removal of water, addition of cane sugar and subjecting to UHT treatment.

## 3. TYPES

3.1 The material shall be of the following two types:

- a) UHT condensed milk, and
- b) UHT condensed skimmed milk.

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\*Rules for rounding off numerical values ( revised ).

## 4. REQUIREMENTS

4.1 The two types of the product (see 3.1), shall conform to the requirements and specifications as given in 4.1.1 to 4.1.9.

4.1.1 The products shall be manufactured from fresh, whole standardized, reconstituted, recombined or skimmed milk obtained from cow milk or buffalo milk or a mixture thereof (milk solids suitably processed may also be used), suitably standardized to give the final products as given in Table 1. The milk and/or milk solids used in the manufacture shall be free from non-permitted additives.

**TABLE 1 COMPOSITIONAL SPECIFICATION FOR UHT CONDENSED MILK AND UHT CONDENSED SKIMMED MILK**

(Clauses 4.1.1 and 4.1.11)

Sl. No.	CHARACTERISTIC	REQUIREMENTS FOR		METHOD OF TEST, REF TO	
		UHT Condensed Milk	UHT Condensed Skimmed Milk	Appendix of IS:1166-1986*	Other Indian Standards
(1)	(2)	(3)	(4)	(5)	(6)
i)	Total milk solids, percent by mass, <i>Min</i>	26.0	20.0	B	—
ii)	Fat, percent by mass	Not less than 8.0	Not more than 0.5	—	IS : H762-1986†
iii)	Sucrose, percent by mass, <i>Max</i>	18	18	C	—
iv)	Titratable acidity (as lactic acid), percent by mass, <i>Max</i>	0.35	0.35	D	—
v)	Titratable acidity (as acetic acid) after incubation of packages for 7 days at 37°C. percent by mass, <i>Max</i>	0.37	0.37	D	—

\*Specification for condensed milk, partly skimmed and skimmed condensed milk (second revision).

†Method for determination of fat content in condensed milk and evaporated milk (Reference method).

4.1.2 The products may contain added refined lactose, permitted flavours, calcium chloride, citric acid, sodium citrate, sodium salts of

orthophosphoric acid and polyphosphoric acid. Such additions shall not exceed 0.3 percent by mass of the finished products ( the additions need not be declared on the label ).

**4.1.3 Quality of Ingredients** — The ingredients shall be clean, of good quality and safe. They shall conform to their normal quality requirements, such as colour, flavour and odour.

**4.1.4 Colour** — The products shall have whitish to light brown colour.

**4.1.5 Flavour and Taste** — The flavour of the fresh products shall be pleasant and clean. They shall be free from rancid, fruity, mouldy, tallowy, cooked, sour, sandy [ for definitions of these terms, see IS : 5126 ( Part 2 )-1969\* ] and any other objectionable odour and taste. These may be judged on the basis of their sensory characteristics ( for details, see IS : 10029-1981† ). There shall be no unusual flavour and taste, and there shall be no visible sediment.

**4.1.6 Sugar used in the manufacture of UHT condensed milk and UHT condensed skimmed milk**, shall conform to IS : 1679-1960‡ or any other good quality food grade sugar.

**4.1.7** The products may be fortified with vitamins A, D and B group. The vitamins shall be of food grade. Levels of fortification shall be declared on the container. However, even with this fortification, exclusive use of condensed milk for infant is not recommended.

**4.1.8 Size of Lactose Crystals** — The material shall not have more than 30 percent of the lactose crystals of size greater than 15  $\mu\text{m}$ , when determined by the method given in Appendix A of IS : 1166-1986§.

**4.1.9 Hygienic Conditions** — The material should be, as far as possible, manufactured and packed under hygienic conditions in the licensed premises ( see IS : 2491-1972|| ).

**4.1.9.1** The basic principles of hygiene as outlined in IS : 2491-1972|| should be applied with appropriate modifications.

#### **4.1.10 Microbiological Specifications**

**4.1.10.1 Bacterial spores ( plate count )** — The bacterial spore count per 0.1 g of the product shall be not more than 10 when determined according to the method prescribed in Appendix A.

\*Glossary of general terms for sensory evaluation of foods: Part 2 Quality characteristics.

†Method for sensory evaluation of sweetened condensed milk.

‡Specification for sugar used in food preservation industry.

§Specification for condensed milk, partly skimmed and skimmed condensed milk ( second revision ).

|| Code for hygienic conditions for food processing units ( first revision ).

**4.1.10.2 Coliform count** — The coliform bacteria shall be absent in the product when determined according to the method prescribed in IS : 5401-1969\*.

**4.1.10.3 Coagulase positive *Staphylococcus aureus*** — The coagulase positive *Staphylococcus aureus* shall be absent in the products when determined according to the method prescribed in IS : 5887 ( Part 2 )-1976†.

**4.1.11** The product shall also comply with the compositional specifications given in Table 1.

## 5. PACKING AND MARKING

**5.1 Packing** — The material shall be aseptically packed in suitably sterilized food grade polyethylene and/or aluminium foil laminated paper containers or any other suitable food grade containers of adequate mechanical strength capable of withstanding the normal handling and transportation, in quantities of 200 g, and 1 kg in such a way as to protect it from deterioration.

**5.2 Marking** — Each container shall be legibly and indelibly marked with the following particulars :

- a) Name of the manufacturer;
- b) Type of material;
- c) Batch or code number;
- d) Minimum net mass;
- e) Levels of fortification with vitamins, if done;
- f) The contents of this container; on reconstitution as per the directions have..... litre(s) of standardized, toned double toned or skimmed milk with added sugar (depending upon the type of the material );
- g) Any other requirement under the standards of Weights and Measures ( Packaged Commodities ) Rules, 1977; and
- h) 'Mother's milk is best for your baby.

\*Methods for detection and estimation of coliform bacteria in foodstuffs.

†Methods for detection of bacteria responsible for food poisoning: Part 2 Isolation, identification and enumeration of *Staphylococcus aureus* and faecal streptococci. ( first revision ).

### 5.2.1 The container may also be marked with the Standard Mark.

NOTE — The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

## 6. SAMPLING

6.1 The method of drawing representative samples of the material and the criteria for conformity shall be as prescribed in Appendix F of IS : 1166-1986\*.

## 7. TESTS

7.1 Tests shall be carried out as prescribed in the appropriate appendices and Indian Standards given in 4.1.8, 4.1.10 and col 5 and 6 of Table 1.

7.2 Quality of Reagents — Unless otherwise specified, pure chemicals shall be employed in tests and distilled water ( see IS : 1070-1977† ) shall be used where the use of water as a reagent is intended.

NOTE — 'Pure chemicals' shall mean the chemicals that do not contain impurities which affect the results of analysis.

# APPENDIX A

( Clause 4.1.10.1 )

## ENUMERATION OF BACTERIAL SPORES

### A-0. PRINCIPLE

A-0.1 Sweetened condensed milk, after manufacture may contain bacterial spores, both aerobic and anaerobic type. The enumeration methods for these organisms are different. The prepared sample is subjected to heat treatment at 80°C for 10 minutes to destroy non-spore forming

\*Specification for condensed milk partly skimmed and skimmed condensed milk ( second revision ).

†Specification for Water for general laboratory use ( second revision ).

bacteria while the spores of aerobic and anaerobic bacteria withstand this temperature. The heated and cooled sample is then used for isolation and enumeration of bacterial spores.

#### **A-1. METHOD FOR DESTROYING NON-SPORE FORMING BACTERIA**

**A-1.1** Prepare 1 : 10 dilution of the sample and heat in a water bath at  $80 \pm 1^{\circ}\text{C}$  for 10 minutes. Keep a check on the temperature of water bath with the help of a thermometer. Cool the heated sample to  $10^{\circ}\text{C}$ .

#### **A-2. ENUMERATION OF SPORE FORMING BACTERIA**

**A-2.1** With the heated and cooled sample (A-1.1), proceed as per the method described in IS : 5887 (Part 4)-1976\*.

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\*Methods for detection of bacteria responsible for food poisoning : Part 4 Isolation and identification of *Clostridium welchii*, *Clostridium botulinum* and *Bacillus cereus* and enumeration of *Clostridium welchii* and *Bacillus cereus* (first revision).

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# INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

## Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

## Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

## Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	1 N = 1 kg.m/s <sup>2</sup>
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m <sup>2</sup>
Frequency	hertz	Hz	1 Hz = 1 c/s (s <sup>-1</sup> )
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m <sup>2</sup>